AWS-8248

Industrial Workstation
with 14.1" LCD Display

Users Manual

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這是甲類的資訊產品，在居住的環境中使用時，
可能會造成射頻干擾，在這種情況下，使用者會
被要求採取某些適當的對策。

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FCC Class A

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses and can radiate radio frequency energy. If not installed and used in accordance with this user's manual, it may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference, in which case the user will be required to correct the interference at his own expense.

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Packing List

Before you set up the AWS-8248, make sure that the following items have been included in your package, and that this manual is in good condition. If anything is missing or damaged, contact your dealer immediately:

- One AWS-8248 industrial workstation with 14.I" flat panel display
- One accessory box, including:
  - One power cord
  - One keyboard transfer cable
  - One HMI products drivers and utilities CD-ROM
  - AWS-8248 User's Manual
  - Flat gray cable for 3.5" HDD and slim CD-ROM
  - RS-232 cable to link touchscreen to CPU card (for -T models only)
  - TSCB-9516 drivers installation guide (for -T models only)
  - Screw bag with screws-

If any of these items is missing or damaged, contact your distributor or sales representative immediately.

Additional Information and Assistance

1.Visit the Advantech web site at **www.advantech.com** where you can find the latest information about the product.

2.Contact your distributor, sales representative, or Advantech's customer service center for technical support if you need additional assistance. Please have the following information ready before you call:

•Product name and serial number

•Description of your peripheral attachments

•Description of your software (operating system, version, application software, etc.)

•A complete description of the problem

•The exact wording of any error messages

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Safety Instructions

1. Read these safety instructions carefully.
2. Keep this User's Manual for later reference.
3. Disconnect this equipment from any AC outlet before cleaning. Use a damp cloth. Do not use liquid or spray detergents for cleaning.
4. For plug-in equipment, the power outlet socket must be located near the equipment and must be easily accessible.
5. Keep this equipment away from humidity.
6. Put this equipment on a reliable surface during installation. Dropping it or letting it fall may cause damage.
7. The openings on the enclosure are for air convection. Protect the equipment from overheating. DO NOT COVER THE OPENINGS.
8. Make sure the voltage of the power source is correct before connecting the equipment to the power outlet.
9. Position the power cord so that people cannot step on it. Do not place anything over the power cord.
10. All cautions and warnings on the equipment should be noted.
11. If the equipment is not used for a long time, disconnect it from the power source to avoid damage by transient overvoltage.
12. Never pour any liquid into an opening. This may cause fire or electrical shock.
13. Never open the equipment. For safety reasons, the equipment should be opened only by qualified service personnel.
14. If one of the following situations arises, get the equipment checked by service personnel:
    a. The power cord or plug is damaged.
    b. Liquid has penetrated into the equipment.
    c. The equipment has been exposed to moisture.
    d. The equipment does not work well, or you cannot get it to work according to the user's manual.
    e. The equipment has been dropped and damaged.
    f. The equipment has obvious signs of breakage.
15. DO NOT LEAVE THIS EQUIPMENT IN AN ENVIRONMENT WHERE THE STORAGE TEMPERATURE MAY GO BELOW -20° C (-4° F) OR ABOVE 60° C (140° F). THIS COULD DAMAGE THE EQUIPMENT. THE EQUIPMENT SHOULD BE IN A CONTROLLED ENVIRONMENT.

The sound pressure level at the operator's position according to IEC 704-1:1982 is no more than 70dB (A).

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Wichtige Sicherheishinweise

1. Bitte lesen sie Sich diese Hinweise sorgfältig durch.
2. Heben Sie diese Anleitung für den späteren Gebrauch auf.
3. Vor jedem Reinigen ist das Gerät vom Stromnetz zu trennen. Verwenden Sie Keine Flüssig-oder Aerosolreiniger. Am besten dient ein angefeuchtetes Tuch zur Reinigung.
4. Die NetzanschluBsteckdose soll nahe dem Gerät angebracht und leicht zugänglich sein.
5. Das Gerät ist vor Feuchtigkeit zu schützen.
6. Bei der Aufstellung des Gerätes ist auf sicheren Stand zu achten. Ein Kippen oder Fallen könnte Verletzungen hervorrufen.
7. Die Belüftungsöffnungen dienen zur Luftzirkulation die das Gerät vor überhitzung schützt. Sorgen Sie dafür, daB diese Öffnungen nicht abgedeckt werden.
8. Beachten Sie beim. AnschluB an das Stromnetz die AnschluBwerte.
9. Verlegen Sie die NetzanschluBleitung so, daB niemand darüber fallen kann. Es sollte auch nichts auf der Leitung abgestellt werden.
10. Alle Hinweise und Warnungen die sich am Geräten befinden sind zu beachten.
11. Wird das Gerät über einen längeren Zeitraum nicht benutzt, sollten Sie es vom Stromnetz trennen. Somit wird im Falle einer Überspannung eine Beschädigung vermieden.
12. Durch die Lüftungsöffnungen dürfen niemals Gegenstände oder Flüssigkeiten in das Gerät gelangen. Dies könnte einen Brand bzw. elektrischen Schlag auslösen.
13. Öffnen Sie niemals das Gerät. Das Gerät darf aus Gründen der elektrischen Sicherheit nur von authorisiertem Servicepersonal geöffnet werden.
14. Wenn folgende Situationen auftreten ist das Gerät vom Stromnetz zu trennen und von einer qualifizierten Servicestelle zu überprüfen:
    a - Netzkabel oder Netzstecker sind beschädigt.
    b - Flüssigkeit ist in das Gerät eingedrungen.
    c - Das Gerät war Feuchtigkeit ausgesetzt.
    d - Wenn das Gerät nicht der Bedienungsanleitung entsprechend funktioniert oder Sie mit Hilfe dieser Anleitung keine Verbesserung erzielen.
    e - Das Gerät ist gefallen und/oder das Gehäuse ist beschädigt.
    f - Wenn das Gerät deutliche Anzeichen eines Defektes aufweist.

Der arbeitsplatzbezogene Schalldruckpegel nach DIN 45 635 Teil 1000 beträgt 70dB(A) oder weiger.

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Contents

Chapter 1 Introduction 1
1.1 Introduction 2
Figure 1.1: The PCA-6108C and PCA-6107P2 passive backplanes 3
1.2 Specifications 4
1.3 Front and rear panel layout 7
Figure 1.2: Front panel layout 7
Figure 1.3: Rear panel layout 7
1.4 Dimensions 8
Figure 1.4: AWS-8248 dimensions 8
Chapter 2 System Setup 9
2.1 General 10
2.2 Detaching the work drawer 10
Figure 2.1: Detaching the work drawer 11
2.3 Adding cards 12
Figure 2.2: Installing add-on cards 12
2.4 Installing optional drives 13
Figure 2.3: HDD installation 14
Figure 2.4: Slide CD-ROM installation 14
Figure 2.5: Installing optional drives 14
2.5 Attaching cables 15
Figure 2.6: Connect the display power 15
Figure 2.7: Cables on the rear panel 15
2.6 Rack mounting 16
Figure 2.8: Rack mounting the AWS-8248 16
2.7 Panel mounting 17
Figure 2.9: Panel mounting the AWS-8248 17
Chapter 3 Maintenance 19
3.1 Passive backplane 20
Figure 3.1: Removing the passive backplane 20
3.2 Power supply 21
Figure 3.2: Removing the power supply 21
3.3 LCD display module 22
Figure 3.3: Removing LCD display module (first steps) 22
Figure 3.4: Removing LCD display module (final steps) 23
3.4 Keyboard translator 24
Figure 3.5: Keyboard translator input/output (actual) 24
Figure 3.6: Keyboard translator input/output (schematic) 25
Figure 3.7: Removing the keyboard translator 26

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3.5 LED board 27
Figure 3.8: Removing the LED board 27
3.6 Floppy disc drive (FDD) 28
Figure 3.9: Removing the FDD 28
3.7 Membrane keypad 29
Figure 3.10:Replacing the membrane keypad 30
3.8 Touchscreen sensor (-T models) 31
Figure 3.11:Replacing the touchscreen sensor 32
Chapter 4 Macro Key Programming 33
4.1 Introduction 34
4.2 Macro Key Review 34
4.3 Syntax 35
4.4 How to use SFED8248.COM 37
Figure 4.1: The Macro Editor screen 37
4.5 Example 38
Figure 4.2: Macro examples 38
Appendix A Display Timing Mode & OSD 41
A.1 Supported Input Timing Modes 42
Table A.1: Supported Input Formats 42
A.2 OSD Operation Keypad 43
Table A.2: Keypad functions 43
A.3 OSD function and operation 44
Figure A.1:OSD menu 44
Table A.3: OSD Functionality 44
Appendix B Power Supply Specification 45
B.1 Supported Input Timing Modes 46
B.2 -48 V DC power supply 47
Table B.1: -48 VDC power supply output characteristics. 48
Table B.2: -48 VDC power supply DC output wire list 51
B.3 24 VDC power supply 52
Appendix C Touchscreen (optional) 55
C.1 Specifications 56
C.2 Installation of Touchscreen Driver 57

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CHAPTER 1

Introduction

- Introduction
- Specifications
- Front and rear panel layout
- Dimensions

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Chapter 1 Introduction

1.1 Introduction

We designed the AWS-8248 specifically for the factory floor and other harsh industrial environments. This 19" rack/panel-mount workstation offers full state-of-the-art industrial computing technology packaged within one compact unit. It includes a 14.1" color LCD monitor, 7-slot passive backplane, slide-out "work drawer" card cage, 250-watt power supply, 3½" floppy disk drive (slim CD-ROM and 3½" HDD optional), front and rear 5-pin keyboard connectors and a sealed front panel that conforms to NEMA 4 and NEMA 12 specifications. All of these features are housed in a rugged workstation chassis which provides protection from dust, vibration and moisture.

14.1" Color LCD

- Vertical and flat screen for better display quality
- High resolution display (1024 x 768)
- Anti-static treatment on the glass surface to minimize dust accumulation on the monitor
- Digital screen adjustment for accurate picture quality

39-key sealed-membrane operating keypad

You can enter numerical data using the workstation's convenient 39-key sealed-membrane operating keypad. The keypad has excellent tactile response. You can also attach an external keyboard through a connector on the front panel.

Programmable macro function keys

An additional membrane keypad offers 10 ordinary function keys (F1 ~ F10) and 10 programmable macro keys (SF1 ~ SF10). Macro keys automate common key sequences, even inside application programs.

Front-accessible control panel

You can easily access the workstation's controls from the front of the unit via a sturdy protective door. Controls include LEDs, and switches for power and system reset. The front panel also holds a 3½" 1.44 MB FDD.

The aluminum door protects the controls from the environment outside. The door has a waterproof foam-rubber seal and captive handscrew to hold it closed. In addition, the door offers protection against accidental operation of the unit's controls.

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Passive backplanes

The AWS-8248 offers two types of passive backplanes, the PCA-6108C and the PCA-6107P2. They allow you to run your industrial applications from a variety of full-featured CPU cards.

Figure 1.1: The PCA-6108C and PCA-6107P2 passive backplanes

The backplanes are formed from four-layer PCBs with ground and power planes to reduce noise and power-supply impedance. They have LED power indicators for +5 V, +12 V, -5 V and -12 V.

Advantech's PCA-6107P2 passive backplane can be installed into the AWS-8248TP. It contains two PCI-compatible slots, four PC/AT-compatible (ISA-bus) slots and one dedicated slot for a CPU card. Three power-connectors are also included in the PCA-6107P2.

Alternatively, Advantech's PCA-6108C passive backplane can be installed into the AWS-8248T. It contains eight PC/AT-compatible (ISA-bus) slots, termination resistors for high-speed signals and terminal block connectors to supply power from the board.

Convenient work drawer

The AWS-8248's "work drawer" card cage slides out in a snap for reduced MTTR. It makes adding or exchanging plug-in cards and changing power supplies quick and easy. Our standard PC/AT compatible passive backplane lets you run your industrial applications from a variety of full-featured CPU cards. and easy overclocking of frequency and Vcore voltages all through the BIOS Specifications.

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1.2 Specifications

General

- **Construction:** Heavy-duty aluminum and steel chassis
- **Disk drive housing:** Holds one 3½" FDD, one slim CD-ROM and one 3½" HDD (slim CD-ROM and HDD optional)
- **Cooling system:**

- One 32 CFM fan (flow out) on rear panel for power supply
- One 29 CFM fan (flow in) for monitor on rear panel
- One 36 CFM fan in the chassis for plug-in cards

- **Dimensions:**

- Width: 482 mm (19.0")
- Depth: 450 mm (17.7")
- Height: 356 mm (14.0")

- **Weight:** 29 kg (63.9 lbs)

LCD Display

- Display type: 14.1" TFT LCD
- Max. resolution: 1024 x 768
- Maxi. colors: 262K
- Luminance (cd/m^2): 200
- Viewing angle: 90°(H), 50°(H)
- Operating temperature: 0 ~ 50°C
- LCD MTBF: 50,000 hours
- Backlight lifetime: 50,000 hours
- Interface: Direct VGA
- LCD defect specification: refer to Advantech web site

Front Panel

- **Keypads:** One with 39 operating keys, one with 10 function keys and 10 programmable macro function keys

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- **Keyboard connector:** Pre-wired 5-pin DIN connector with dust-protection cover on front and rear panel
- **Switches:** Reset and power on/off.

Passive backplane

- **AWS-8248T & AWS-8248T-T:**

  8 ISA slot passive backplane
- **AWS-8248TP & AWS-8248TP-T:**

  4 ISA / 2 PCI / 1 CPU slot passive backplane

Power supply

- **AC input:** 250 W (standard offer)
- **Input voltage:**

  85 ~ 130 V_{AC} or 180 ~ 260 V_{AC} , switchable
- **Output voltage:**

  +5 V @ 25 A; +12 V @ 9 A; -5 V @ 0.5 A; -12 V @ 2.0 A
- **MTBF:** 100,000 hours
- **Safety:** UL/CSA/TUV

-48 V_{DC} input 310 W (optional)

- **Input voltage:** -38 ~ -58 V_{DC}
- **Output voltage:**

  +5 V @ 30 A; +12 V @ 10 A; -5 V @ 1.0 A; -12 V @ 5 A
- **MTBF:** 100,000 hours

24 V_{DC} input 250 W (optional)

- Input voltage: 19 ~ 32 V_{DC}
- Output voltage:

  +5 V @ 25 A; +12 V @ 10 A; -5 V @ 1.0 A; -12 V @ 1.0 A
- **MTBF:** 100,000 hours

Compact CD-ROM kit (optional)

- 24x slim CD-ROM kit with support bracket

(model no. CDR-825-0024)

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Environmental specifications

- **Operating temperature:** 0 ~ 50° C (32 ~ 122° F)
- **Relative humidity:** 5 ~ 85% @ 40° C, non-condensing
- **Vibration: 5 ~ 17 Hz, 0.1" double-amplitude displacement 17 ~ 500 Hz, 1.0 G peak to peak.**

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1.3 Front and rear panel layout

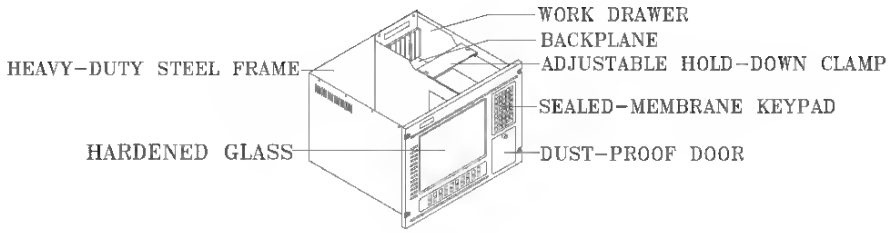

Figure 1.2: Front panel layout

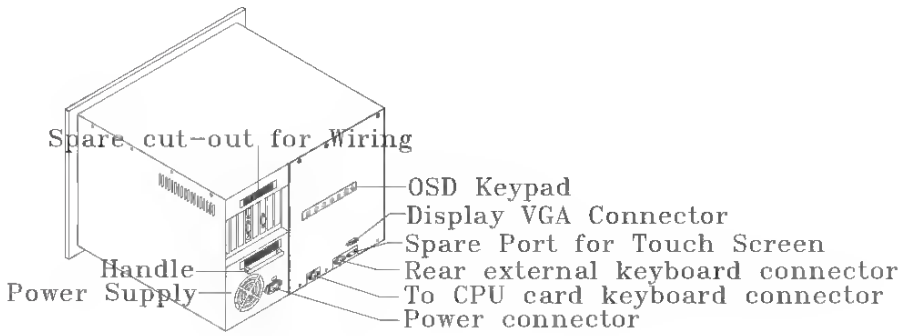

Figure 1.3: Rear panel layout

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1.4 Dimensions

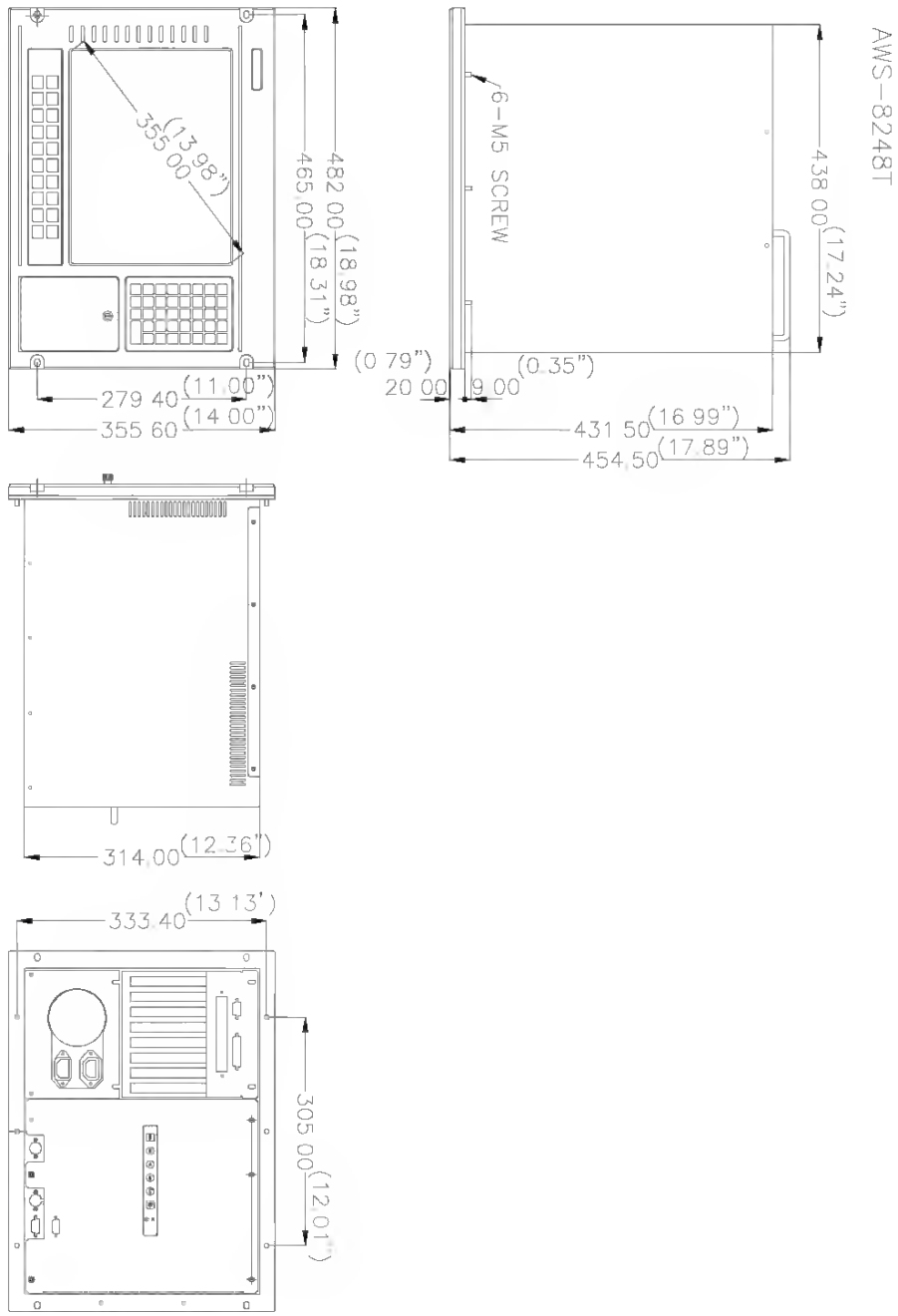

Figure 1.4: AWS-8248 dimensions

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CHAPTER 2

System Setup

- General
- Detaching the work drawer
- Adding cards
- Installing optional drives
- Attaching cables
- Rack/Panel mounting

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Chapter 2 System Setup

2.1 General

When you receive your workstation you will find a backplane, power supply, and floppy disk drive already installed. Further setup of the AWS-8248 is easy. All you have to do is slide out its work drawer module, install a CPU card, optional hard disk drive and whatever additional I/O cards your application requires. You can then mount your workstation into a 19-inch rack or into a panel.

Warning!

1. Do not begin your installation until you are sure there is no power flowing within the AWS-8248. Power must be switched off and the main power cord unplugged.

2. Every time you service the AWS-8248, you should switch the power off and unplug the main power cord.

2.2 Detaching the work drawer

The work drawer is a card cage that slides in and out of the body of the AWS-8248, providing easy access to your cards, drives and power supply.

1. Detach the cables that connect the work drawer to the main chassis.
2. Detach the main power cord, keyboard and video connectors from the work drawer.
3. Four screws on the back of the AWS-8248 hold the drawer in the chassis. Remove the screws, and the drawer can then slide out freely.

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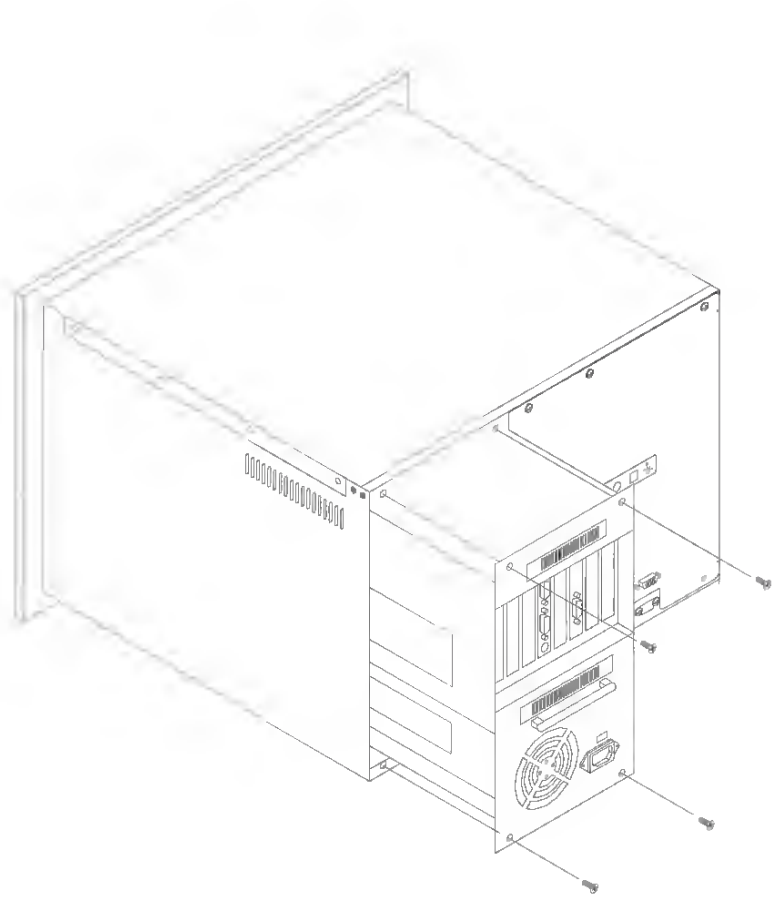

Figure 2.1: Detaching the work drawer

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2.3 Adding cards

Remove the cover of the work drawer by either removing the 10 screws that attach it or by sliding it out. Remove the screw that fixes the card hold-down clamp, and remove the clamp.

Slowly slide the card in and carefully press it into the backplane socket. Secure it by screwing it into the top mounting bar. (See Fig. 2-2.) Connect the card wiring. Add any additional cards or take out cards you need to service. Reattach the hold-down clamp. When you have finished, reattach the cover.

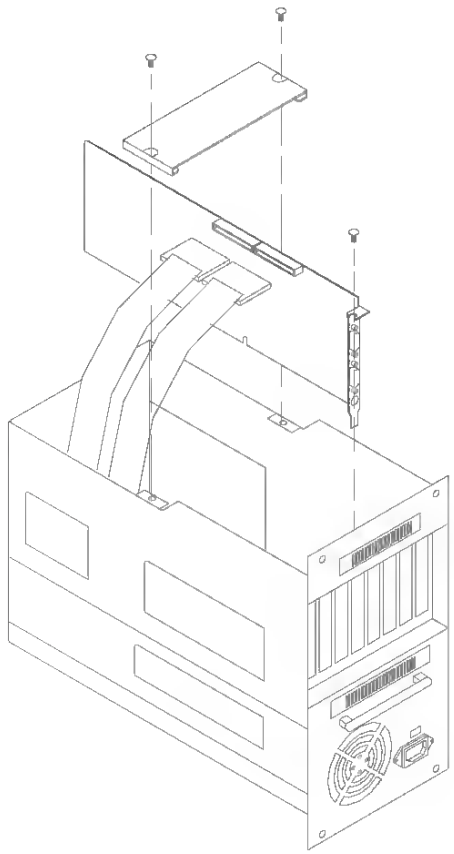

Figure 2.2: Installing add-on cards

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2.4 Installing optional drives

The AWS-8248 provides space for three disk drives underneath the work drawer. That is, one floppy disk drive, one hard disk drive and one slim CD-ROM drive. If you wish, you can add an extra hard disk drive and an extra slim CD-ROM drive above the power supply. (See Figs. 2-1 and 2-3.)

1. Remove the six screws at the rear of the work drawer and pull down the power supply assembly using the handle. You will find a drive bay for fixing an HDD and a slim CD-ROM drive.
2. Detach the four screws from the drive bay, and slide out the two drive-support brackets.
3. Attach the HDD by fixing it to the drive support brackets with the six screws.
4. Add the optional CD-ROM (CDR-825-0024) over the HDD, and tighten it with the six screws.
5. Slide the assembled HDD and CD-ROM drive into the drive bay.
6. Attach a 40-pin ribbon cable with two connectors; one being a power connector to the HDD, and the other being a power connector to the CD-ROM.
7. Secure the drive in the drive bay with the screws, and attach this assembly to the work drawer.

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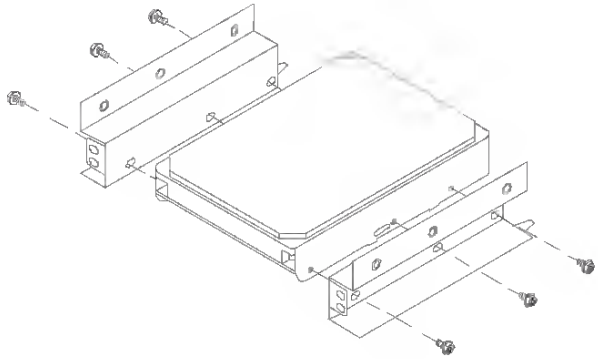

Figure 2.3: HDD installation

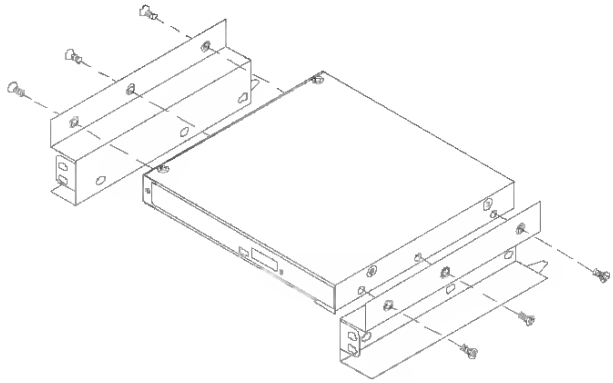

Figure 2.4: Slide CD-ROM installation

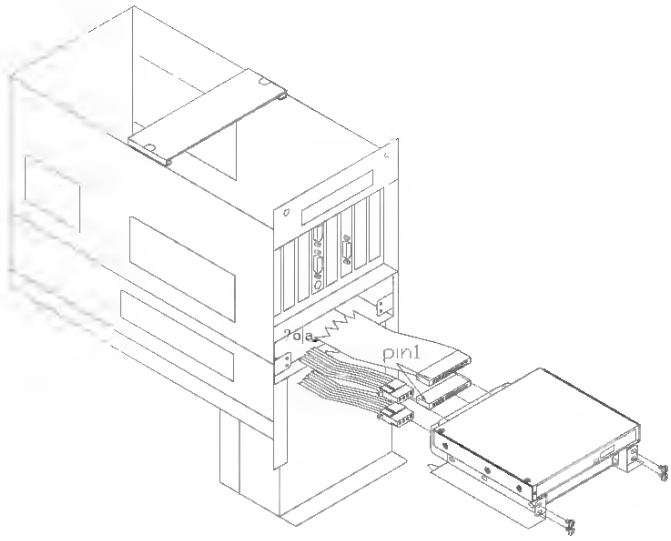

Figure 2.5: Installing optional drives

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2.5 Attaching cables

Once you have added your cards, drives and other equipment, connect the display power (see Fig. 2-6, and reattach the cables on the rear panel (see Fig. 2-7), you should switch on the AWS-8248 and confirm that it works.

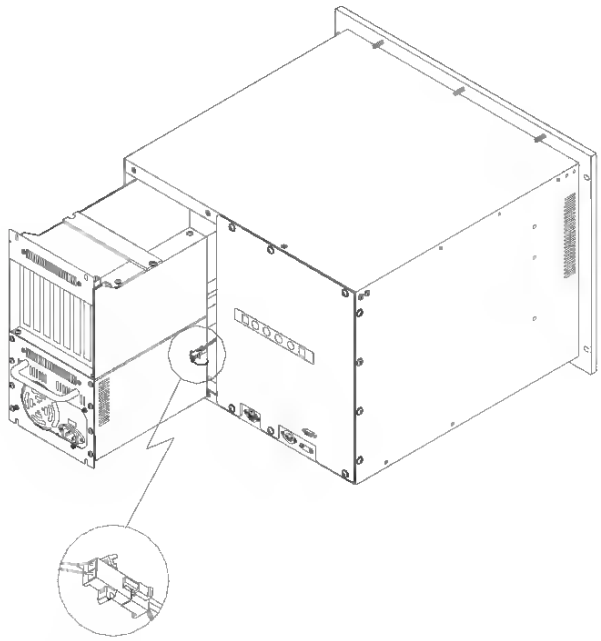

Figure 2.6: Connect the display power

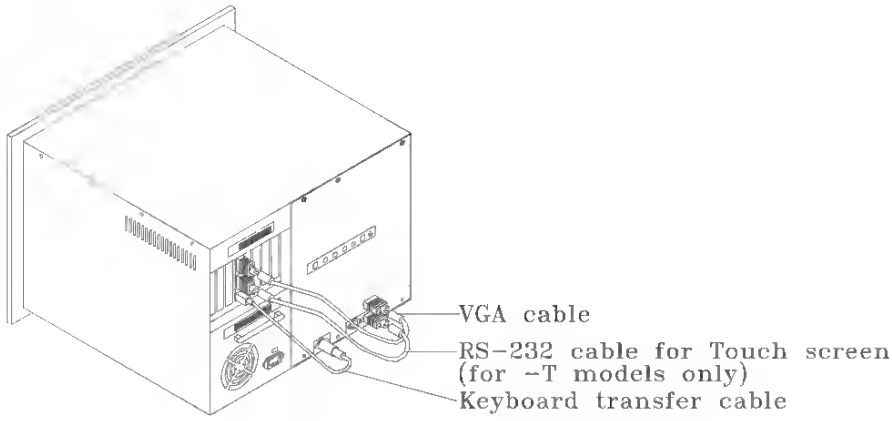

Figure 2.7: Cables on the rear panel

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2.6 Rack mounting

The AWS-8248 can be mounted in a 19" rack. Ensure that all addi-tional equipment has been installed correctly and that the cabling has been reat-tached. (See Fig. 2-7) Remove the screw covers on the front panel. Attach the case to the rack using screws on both sides.

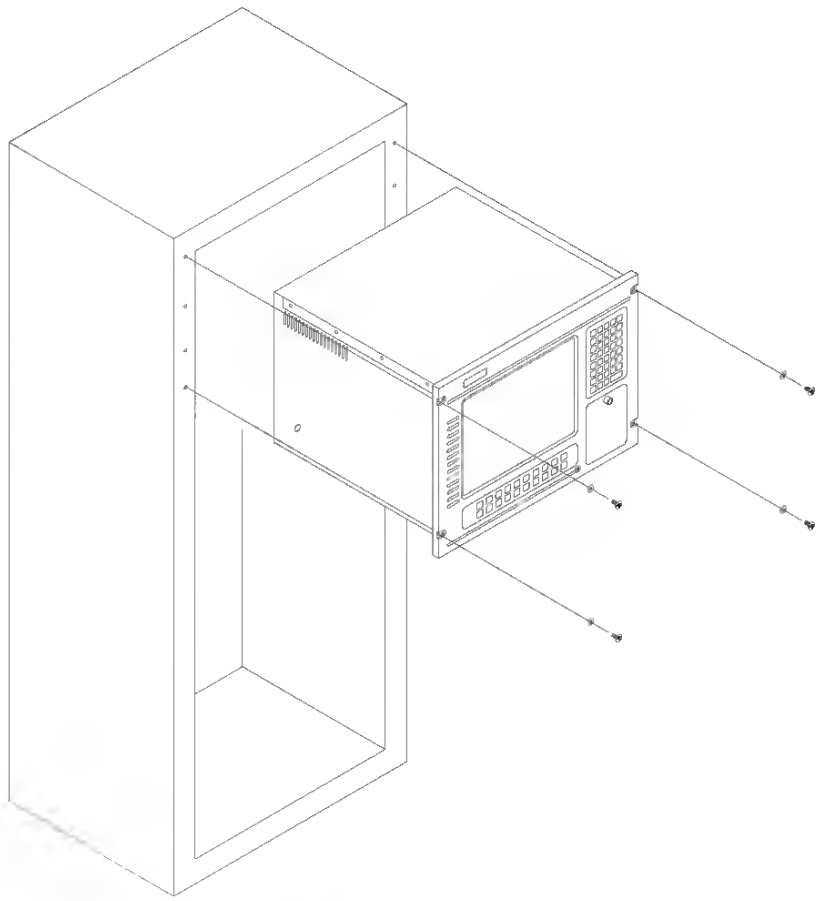

Figure 2.8: Rack mounting the AWS-8248

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2.7 Panel mounting

Panel mounting the AWS-8248 is easy. Just line up the holes in the panel aperture and the holes on the panel, and then secure the AWS-8248 to the panel with the mounting bolts.

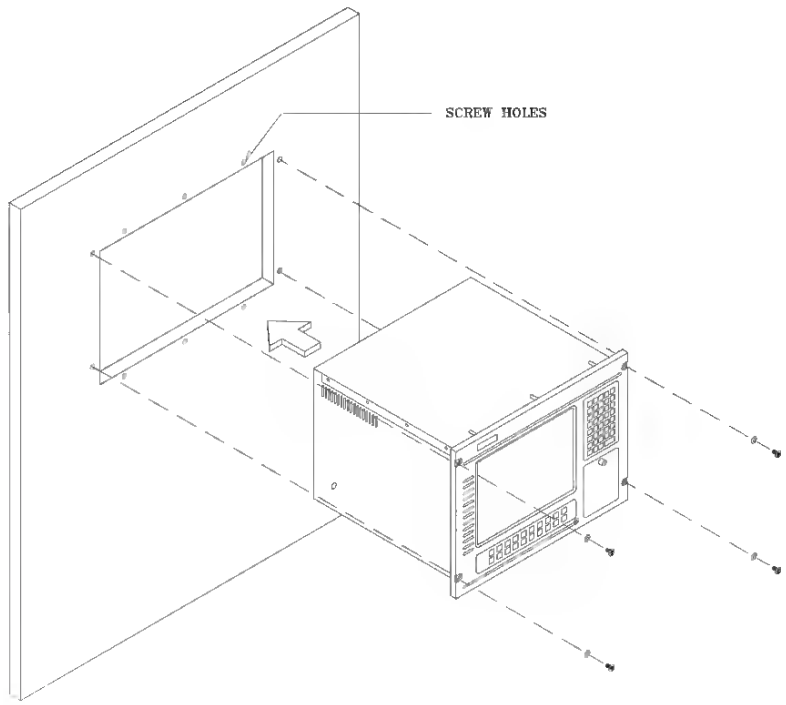

Figure 2.9: Panel mounting the AWS-8248

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CHAPTER 3

Maintenance

- Passive backplane
- Power supply
- CRT m onitor
- Keyboard translator
- LED board
- Floppy disk drive (FDD)
- Membrane keyboard
- Touchscreen sensor (optional)

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Chapter 3 Maintenance

3.1 Passive backplane

Before detaching the backplane, you must slide out the work drawer. Follow these steps:

1. Switch off the power, and detach the main power cord.
2. Detach the work drawer from the AWS-8248 unit. (See Fig. 2-1.)
3. Slide the work drawer out as far as it will go. Detach the holding clamp, cables and all the installed cards.
4. Detach the P8 and P9 power connectors by pulling them down. Unscrew the seven screws and detach the backplane.Our workstations are equipped with programmable function keys (macro keys) that greatly enhance the operator interface. Macros, which are far more powerful than batch files, automate the most commonly used input sequences. They extended their functional reach to within application programs.(See Fig. 3-1.)

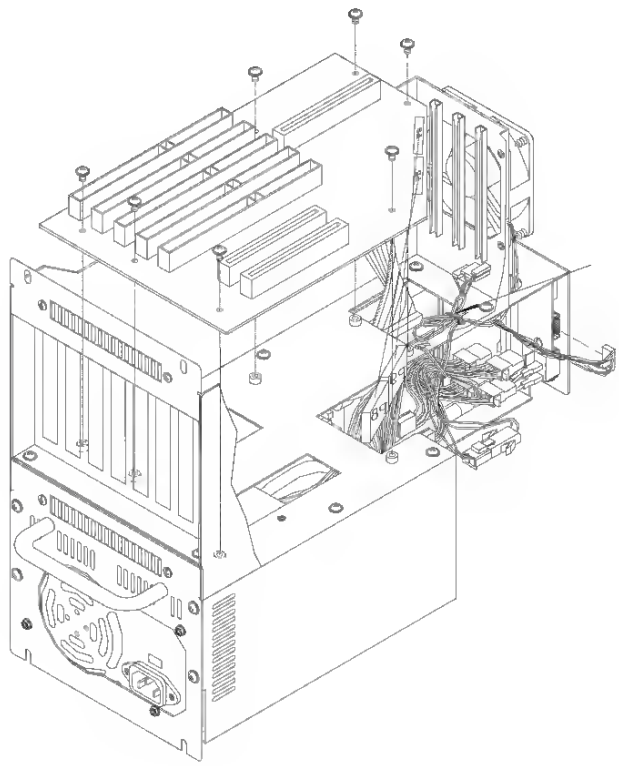

Figure 3.1: Removing the passive backplane

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3.2 Power supply

The power supply provides 250 watts and meets UL, CSA and TUV standards. To repair it, you must slide out the work drawer.

1. Switch off the power, and detach the main power cord.
2. Detach the work drawer from the AWS-8248 unit.
   (See Fig. 2-1.)
3. Slide the work drawer out as far as it will go.
4. Detach the P8 and P9 power connectors by pulling them down.
5. Remove the four screws at the rear of the work drawer. Pull down the power supply assembly using the handle.
   (See Fig. 3-2.)
6. Remove the four screws at the rear of the power supply holding plate.
7. Detach the power supply and replace it.

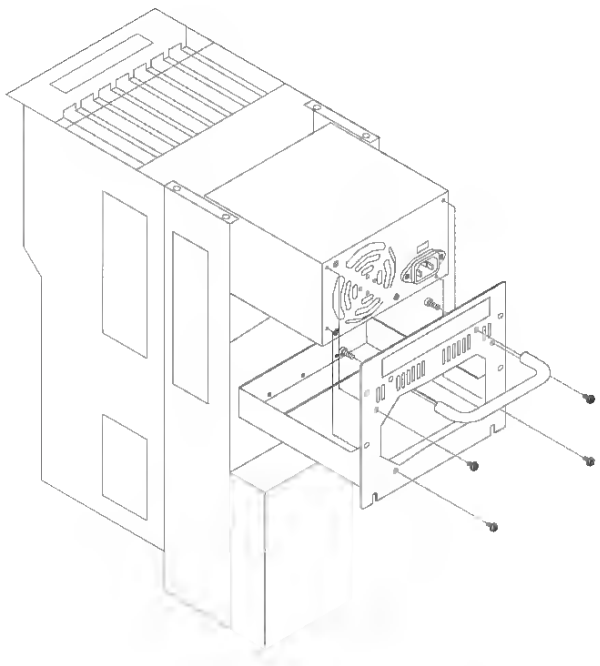

Figure 3.2: Removing the power supply

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3.3 LCD display module

1. Switch off the power, and detach all the cables.
2. Detach and slide out the work drawer. (Refer Fig. 2-1.)
3. Unscrew and detach the upper and back cover. (Refer Fig. 3-3)
4. Unscrew and detach the keyboard translator board. (Refer Fig. 3-3)
5. Unscrew the 4 screws which hold the LCD display module.(Refer Figs. 3-4.)

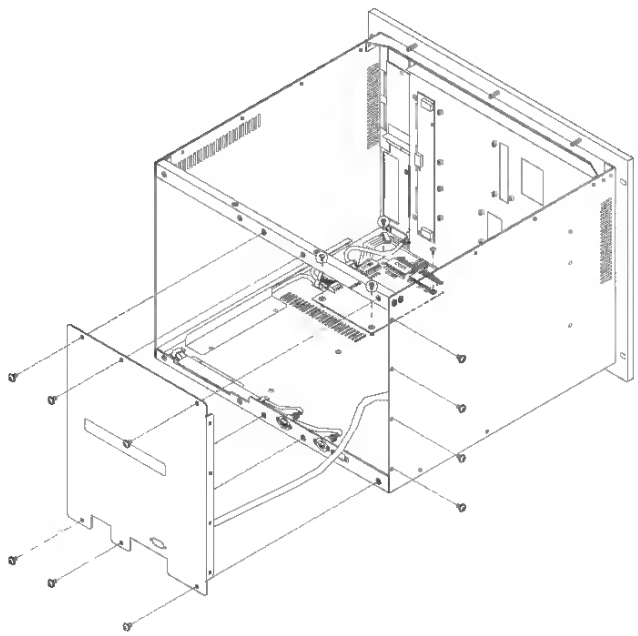

Figure 3.3: Removing LCD display module (first steps)

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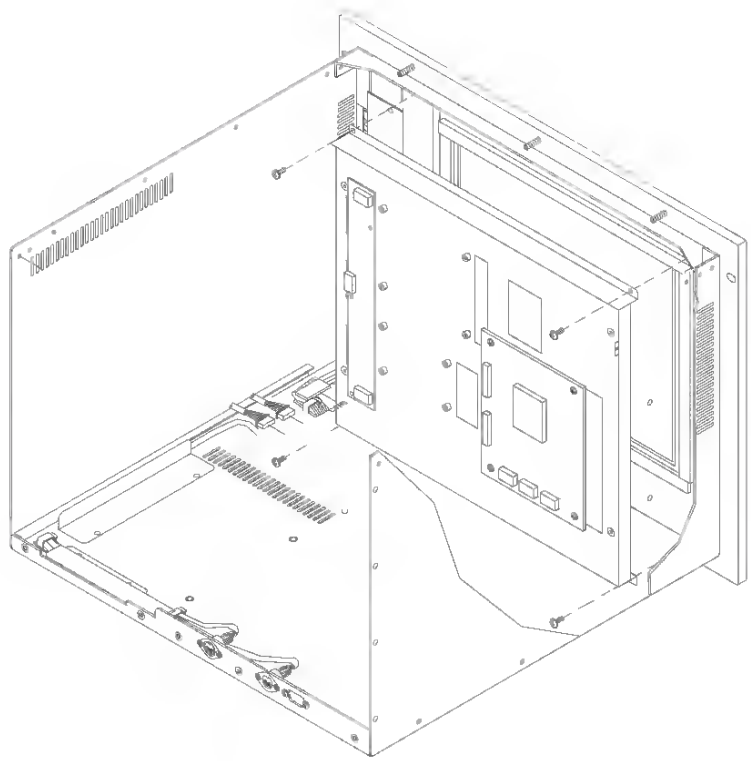

Figure 3.4: Removing LCD display module (final steps)

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3.4 Keyboard translator

The keyboard translator is an interface between a standard PC keyboard layout and a specific keypad layout. The output side is connected to the keyboard connector of the CPU card. The input side is connected to three flat cables leading to the membrane keypad and two 5-pin external keyboard jacks.

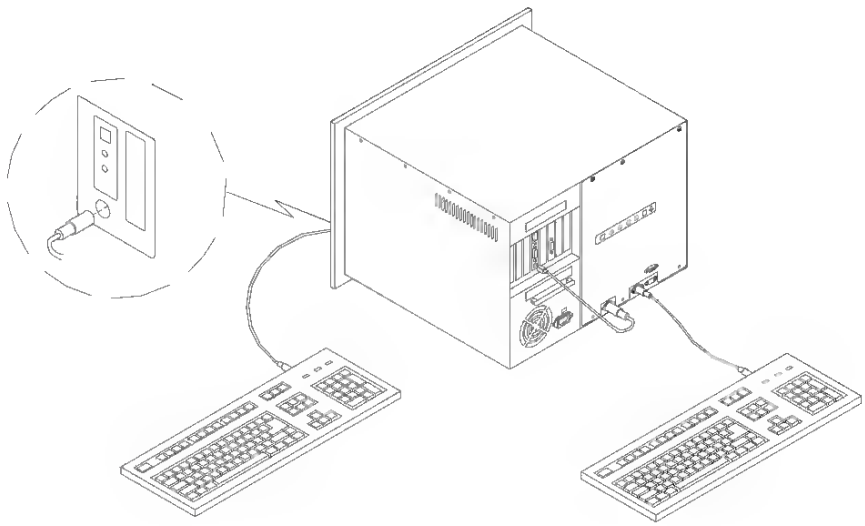

Figure 3.5: Keyboard translator input/output (actual)

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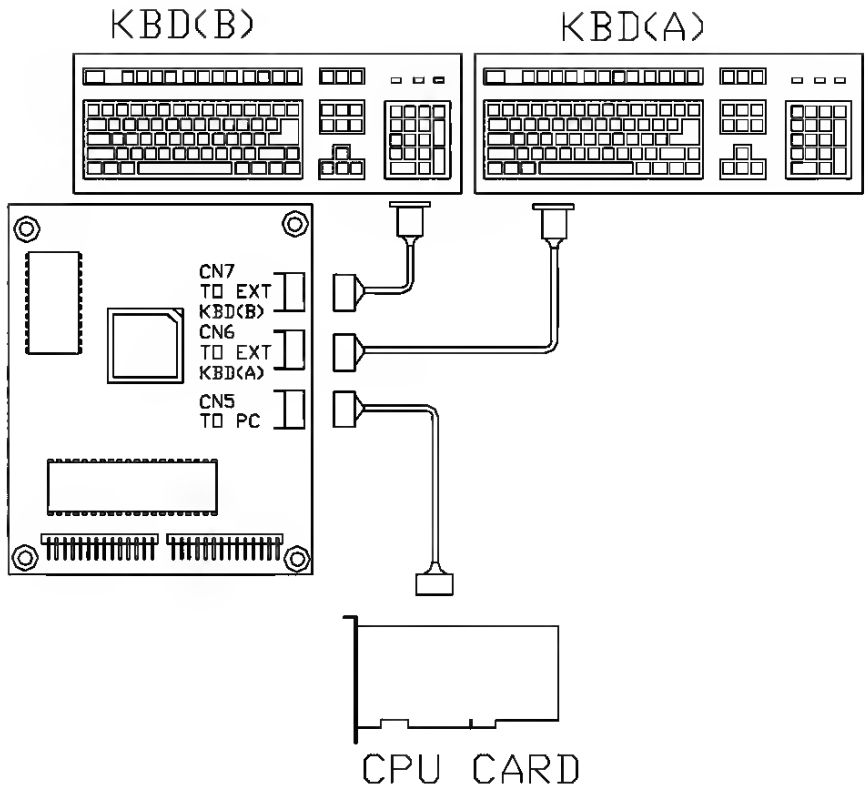

Figure 3.6: Keyboard translator input/output (schematic)

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To service the keyboard translator:

1. Switch off the power, and detach the main power cord.
2. Detach the work drawer and cover from the AWS-8248 unit. (See Fig. 2-1.)
3. Slide the work drawer out as far as it will go.
4. Detach all cables connected to the keyboard translator. These include cables to the keyboards, the cable to the CPU card, and the cable to the function keypad.
5. Detach the cables which connect the keyboard translator to the operating keypad. You should also detach these cables from the operating keypad. To do so, remove the membrane keypad connector protective bracket, and carefully pull off the two membrane keypad cables.
6. Unscrew the three screws, pull out the keyboard translator, and replace it.

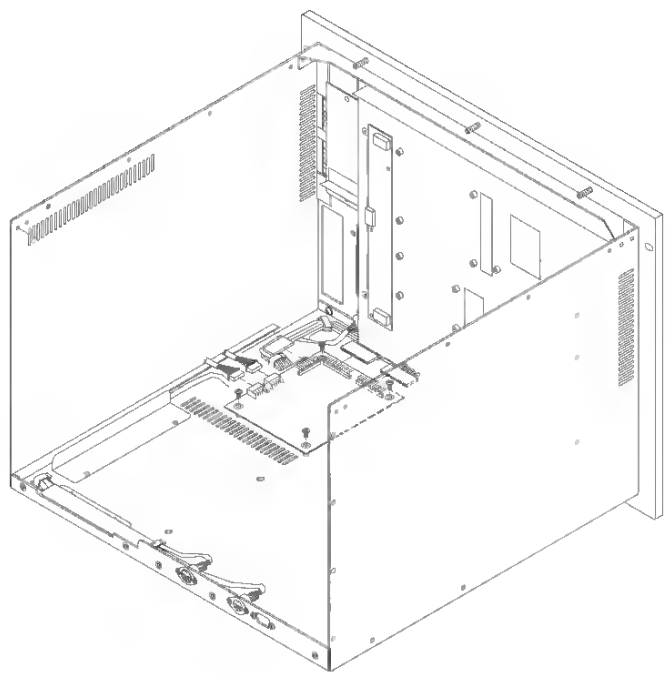

Figure 3.7: Removing the keyboard translator

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3.5 LED board

Before replacing the LED board, you must slide out the work drawer. Follow these steps:

1. Switch off the power, and detach the main power cord.
2. Detach the work drawer from the AWS-8248 unit. (See Fig. 2-1).
3. Slide the work drawer out as far as it will go.
4. Pull off the LED cable.
5. Unscrew the two screws, and replace the LED board. (See Fig. 3-8.)

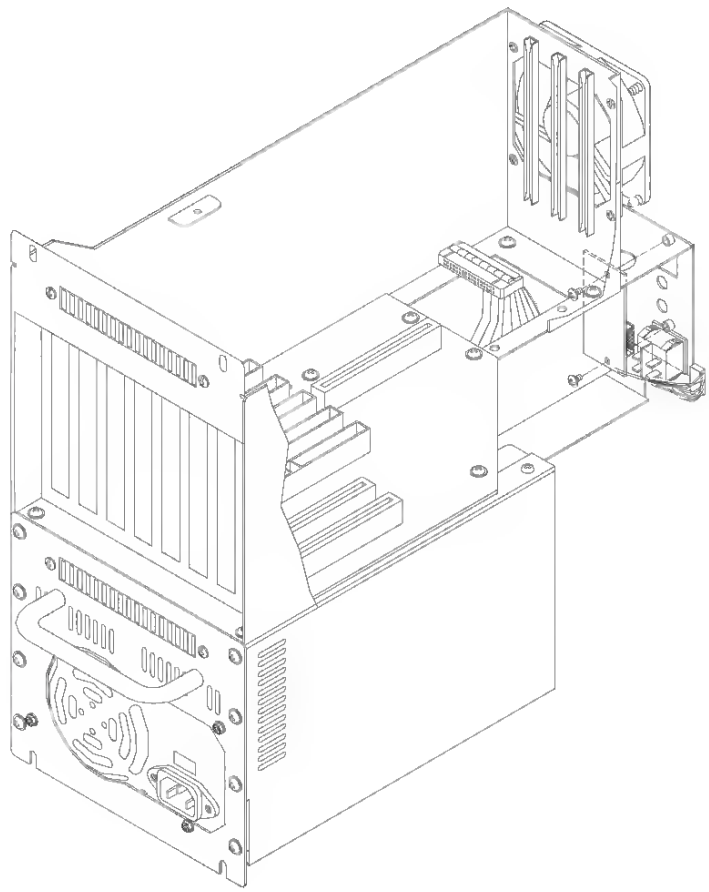

Figure 3.8: Removing the LED board

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3.6 Floppy disc drive (FDD)

Before replacing the FDD, you must slide out the work drawer. Follow these steps:

1. Switch off the power, and detach the main power cord.
2. Detach the work drawer from the AWS-8248 unit. (See Fig. 2-1.)
3. Slide the work drawer out as far as it will go.
4. Pull off the flat cable and the power cable.
5. Unscrew the four screws on the outside of the side panel of the AWS-8248 unit, and remove the FDD. (See Fig. 3-9.)

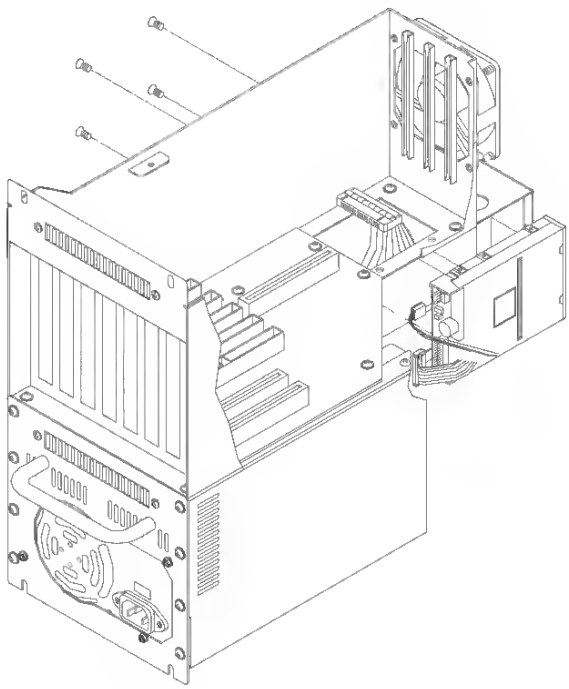

Figure 3.9: Removing the FDD

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3.7 Membrane keypad

This eventually wears out after exhaustive and prolonged use. The metal dome switches lose their elasticity, the contact surfaces wear down, and chemical corrosion sets in. The membrane keypad film can become torn. If more than, say, three metal domes are broken, this may indicate that the keypad tail series is broken, or that the single cable connecting the keypad tail is defective.

Replacing the membrane keypad is now easier than before. You must, however, slide out the work drawer.

To replace the operating membrane keypad:

1. Switch off the power, and detach the main power cord.
2. Detach the work drawer and cover from the AWS-8248 unit. (See Fig. 2-1.)
3. Slide the work drawer out as far as it will go.
4. Remove the membrane keypad connector protective bracket, and carefully pull off the two membrane keypad cables. (See Fig. 3-10.)
5. Tear the operating membrane keypad from the aluminium panel, and replace it.

To replace the function membrane keypad:

1. Tear the function membrane keypad from the aluminium panel directly.
2. Carefully pull off the membrane keypad cables connecting the keypad tail. (See Fig. 3-10.)
3. Remove the function membrane keypad, and replace it.

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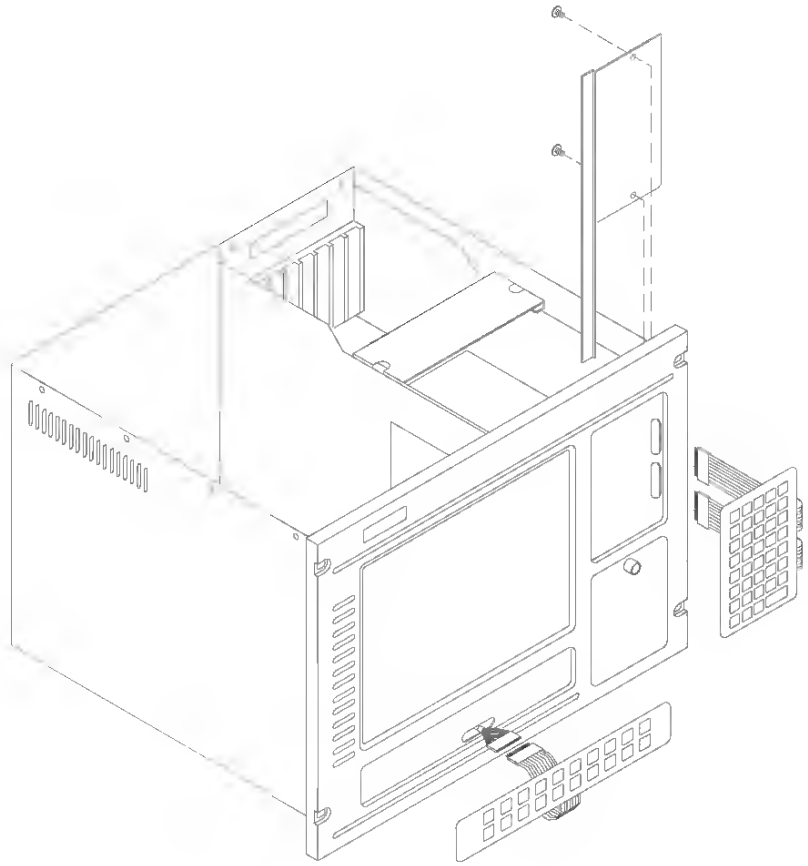

Figure 3.10: Replacing the membrane keypad

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3.8 Touchscreen sensor (-T models)

The touchscreen sensor may eventually wear out after exhaustive and prolonged use. Before you replace it, you must slide out the work drawer.

1. Switch off the power, and detach the main power cord.
2. Detach the work drawer and cover from the AWS-8248 unit. (See Fig. 2-1.)
3. Slide the work drawer out as far as it will go.
4. Remove the operating membrane keypad connector protective bracket, and carefully pull off the two operating membrane keypad cables.
5. Detach the external keyboard cable from the keyboard translator.
6. Detach the four waterproof sponges.
7. Unscrew the 12 screws around the perimeter of the front panel which hold the panel to the main chassis.
8. Separate the front panel from the chassis, the touchscreen cable from the touchscreen sensor, and the function keypad cable from the function keypad. (See Fig. 3-11.)
9. Detach the four shock-absorbing sponges, and detach the touch-screen sensor. Remove any residual adhesive from the aluminium panel.
10. Apply new adhesive, and attach the touchscreen sensor to the aluminium panel. Make sure that the sensor is oriented correctly.

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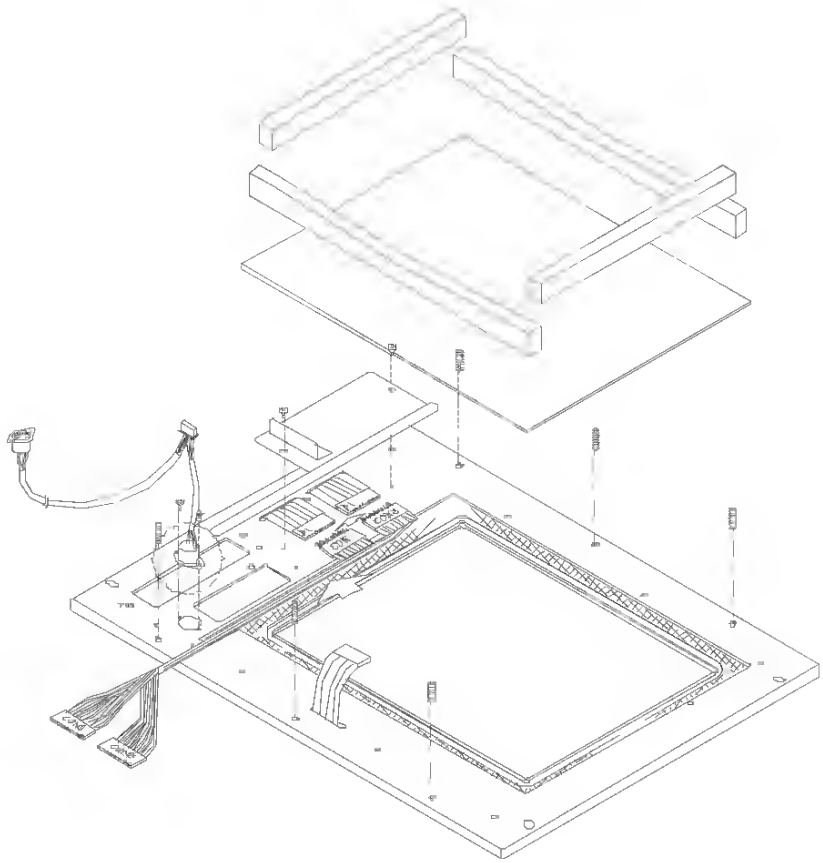

Figure 3.11: Replacing the touchscreen sensor

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CHAPTER 4

Macro Key Programming

- Introduction
- Macro key overview
- Syntax
- Using SFED8248.COM
- Examples

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Chapter 4 Macro Key Programming

4.1 Introduction

Our workstations are equipped with programmable function keys (macro keys) that greatly enhance the operator interface. Macros, which are far more powerful than batch files, automate the most commonly used input sequences. They extended their functional reach to within application programs.

4.2 Macro Key Review

The complete macro function consists of the following elements:

Macro keys (SF1 , SF2, ... SF10)

Ten programmable macro keys that are located on the dust-proof door on the front panel of your workstation.

Macro EEPROM

Holds the key sequences that are activated when the corresponding macro key is pushed.

Macro programming utility

In the sub-directory, AWS-8259&8124&8248/KBT-utility, of the HMI utility CD-ROM, you will find a program called SFED8248.COM.. The SFED8248 program provides an edit function to produce an ASCII file that contains key stroke sequences for every macro key. After you have finished editing the file, the program will ask you whether you want to save the macro script and/or transmit it to the EEPROM. Macros consist of keystroke sequences to automate the most common procedures in your application. The way they function is much like batch files (.BAT) under DOS, but there are some differences. In a Macro, you have to specify the ENTER key explicitly. Also, macros give you the option of entering key sequences in an application that was executed by the macro itself.

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4.3 Syntax

Macro definitions consist of ASCII characters or character codes for special characters (ALT, ENTER, SHIFT, F1, SF2, and so on). These codes are predefined, and SFED8248.COM will display them on the screen for you. They are easily recognizable,

appearing between the square brackets, "[" and "]".

For example:

ALT is represented by [26]

ENTER is represented by [33]

In your macro script, you can enter ordinary text (ASCII characters) or the code(s) of the required special character(s).

For example:

CD\TOOLKIT[33] means CD\TOOLKIT [ENTER]

For combination keystrokes (ALT/SHIFT/CTRL + another key) enter the codes of the special characters, followed by [90]

(RELEASE).

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For example:

ALT-F1 is represented by [26][44][90]

CRTL-C is represented by [28]C[90]

SHIFT-B is represented by [27]B[90]

ALT-X is represented by [26]X[90] or [26]x[90]

ALT-F1 is represented by [26][44][90]

SHIFT-X is represented by [27]X[90]

SHIFT-F1 is represented by [27][44][90]

CTRL-X is represented by [28]X[90]

CTRL-F is represented by [28][44][90]

CTRL-ALT-DEL is represented by [28][26][41][90] (reboot)

CTRL-ALT-A is represented by [28][26]A[90]

CTRL-SHIFT-1 is represented by [28][27]1[90]

Another useful function is the DELAY instruction. You can instruct the macro program to wait before executing the next keystroke. SFED8248.COM displays the codes that you can use for various delays.

For example:

[86] - wait for 10 seconds before executing next keystroke

[88] - wait for 1 minute before executing next keystroke

[26]A[90][86][26]B[90] means ALT-A, wait 10 seconds, ALT-B

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4.4 How to use SFED8248.COM

First, boot your system under pure DOS mode (not DOS shell in windows) and copy all the files to your hard disk and/or make a backup disk. Then start the macro editor. You will have to specify either an existing macro script file or a new macro script file. Here we will create a new file by typing SFED8248 NEWKEY.TXT [ENTER].

The following screen will appear:

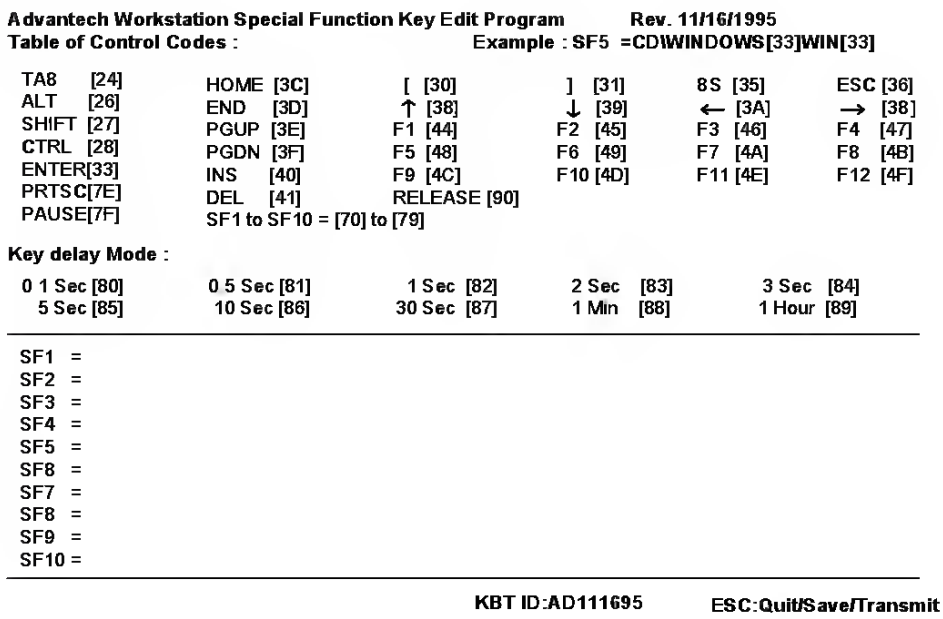

Figure 4.1: The Macro Editor screen

When you have finished editing, press the ESC key. At the bottom line of the screen you will be prompted to choose if you want to save the file and/or if you want to transmit it to the EEPROM.

After confirmation with the Enter key, the tasks are carried out and you return to DOS.

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4.5 Example

We will explain all macro functions that you can find in the EXAMPLE.TXT We will explain all macro functions that you can find in the EXAMPLE.TXT macro script file. When typing SFED8248 EXAMPLE.TXT the following editor screen will appear:

```
Advantech Workstation Special Function Key Edit Program          Rev. 11/16/1995
Table of Control Codes :                    Example : SF5 =CD\WINDOWS[33]WIN[33]

TAB   [24]    HOME  [3C]    [  [30]    ]  [31]    BS   [35]    ESC[36]
ALT   [26]    END   [3D]    ↑  [38]    ↓  [39]    ←  [3A]    →  [3B]
SHIFT [27]    PGUP  [3E]    F1 [44]    F2 [45]    F3 [46]    F4 [47]
CTRL  [28]    PGDN  [3F]    F5 [48]    F6 [49]    F7 [4A]    F8 [4B]
ENTER[33]     INS   [40]    F9 [4C]    F10 [4D]   F11 [4E]   F12 [4F]
PRTSC[7E]     DEL   [41]    RELEASE [90]
PAUSE[7F]     SF1 to SF10 = [70] to [79]

Key delay Mode :

0 1 Sec [80]    0 5 Sec [81]    1  Sec [82]    2 Sec [83]    3 Sec  [84]
  5 Sec [85]     10 Sec [86]    30 Sec [87]    1 Min [88]    1 Hour [89]

SF1  = CD\TOOL[33]SFED825 EXAMPLE TXT[33]
SF2  = COPY C:\CONFIG.EMM C:\CONFIG.SYS[33]Y[33][85][79]
SF3  =
SF4  = C:\WP51\WP[33][86][27][4D][90]REPORT.WP5[33]
SF5  =
SF6  =
SF7  =
SF8  =
SF9  =
SF10 = [28][26][41][90]

Save(Y/N)?    Transmit(Y/N)?    KBT ID:AD111695    ESC:Quit/Save/Transmit
```

Figure 4.2: Macro examples

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SF1 = CD\TOOL[33] SFED825 EXAMPLE.TXT[33]

This macro changes to the TOOL directory, then starts up SFED8248.COM with EXAMPLE.TXT.

SF2 = COPY C:\CONFIG.EMM C:\CONFIG.SYS [33] Y [33] [85] [79]

The configuration information is changed by copying CONFIG.EMM to CONFIG.SYS. After a delay of 5 seconds, [85], the macro invokes macro function key SF10, [79], which was defined to reset the system.

SF4 = C:\WP51\WP[33][86][27][4D][90]REPORT.WP5[33]

This example shows that after a macro executes, it is able to direct the program to accomplish several tasks. WordPerfect is started. After a delay of 10 seconds (time to load the program), the

command Shift-F10, [27][4D], is issued to import a text file. The name of the text file (REPORT.WP5) is inserted; and finally ENTER, [33], causes the text file to be loaded and displayed on the screen.

SF10 = [28][26][41][90]

Restarts the computer (CTRL-ALT-DEL).

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Appendix A

Display Timing Mode & OSD

- Supported input timing modes
- OSD operation keypad
- OSD function and operation

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Appendix A Display Timing Mode and OSD

A.1 Supported Input Timing Modes

The nineteen kinds of timings below are already programmed in this module. The input synchronous signals are automatically recognized.

Resolution	Vertical Frequencies				
	56Hz	60Hz	70Hz	72Hz	75Hz
640x480		Yes		Yes	Yes
800x600	Yes	Yes		Yes	Yes
1024x768		Yes	Yes		Yes

Table A.1: Supported Input Formats

Note 1: *Even if the preset timing is entered, a little adjustment of the functions such as Horizontal period, CLK-delay and display position, are required. The adjusted values are memorized in every preset number.*

Note 2: *This module recognizes the synchronous signals with near preset timing of the frequency of the HS and Vsync, even in the case that the signals other than the preset timing that were entered.*

Note 3: *Because adjustments may not fit, such as differing magnifying ratios or, in the case that you use it except for the display timing that was preset.*

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A.2 OSD Operation Keypad

The OSD keypad, including six keys and a two color indicator, is designed as the OSD operation interface.

The six keypad functions are in Table A-2.

Auto	Press this button to execute auto adjustment process
Sel	Press to show the OSD screen or select an item to change its setting
◀ ▶	To move between items or increase or decrease setting
Exit	To exit from the current setting in OSD function
On/OFF	Turns display backlight ON and OFF

Table A.2: Keypad functions

Note: The green light means that the COMMON board detects the input signal and ends output signal to LCD panel.

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A.3 OSD function and operation

Auto-adjustment process or to adjust manually:

1. Press [Sel] button to display the OSD Menu shown below.
2. Press ◀ or ▶ button to scroll to the desired menu option.
3. Press [Sel] button to select the menu option.
4. Press ◀ or ▶ button to adjust the setting.
5. Press [Exit] button or wait until time out to save changes and exit the menu or sub-menu.

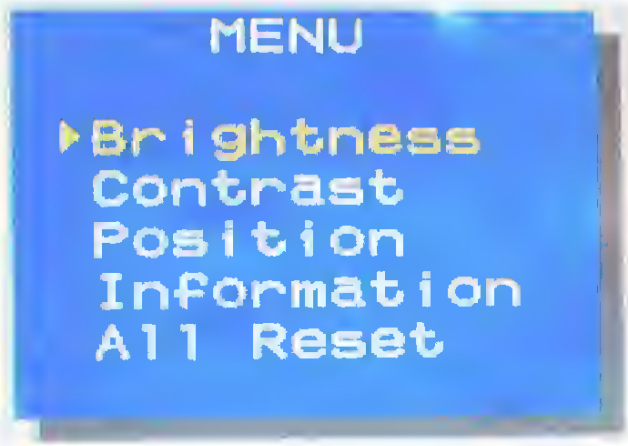

Figure A.1: OSD menu

Table A-3 is the OSD menu hierarchy and function description.

Main Menu	Sub Menu	Sub Menu	Functionality
Brightness	Reset Brightness		Adjust display brightness
Contrast	Contrast	Reset Contrast	Adjust RGB contrast simultaneously
	R Sub Contrast	Reset R Contrast	Adjust R contrast
	G Sub Contrast	Reset G Contrast	Adjust G contrast
	B Sub Contrast	Reset B Contrast	Adjust B contrast
Position	H Size	Reset H. Size	Adjust clock number per line
	Clock Phase	Reset Clock Phase	Adjust phase of ADC sample clock
	H Position	Reset H. Position	Adjust display image left or right
	V. Position	Reset V. Position	Adjust display image up or down
Information			Display input mode information
All Reset			Reset all parameters to factory default setting

Table A.3: OSD Functionality

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Appendix B

Power Supply Specification

- 250 watt power supply
- -48 V_{DC} power supply
- 24 V_{DC} power supply

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Appendix B Power Supply Specifications

B.1 Supported Input Timing Modes

The AWS-8248 off-line switching power supply is ideal for use in workstations. It has been designed to meet UL, CSA and TUV safety standards. It has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment.

Specifications

Input

- **Input range:** 90~135/180~265 V_{AC}
- **Input frequency:** 47 ~ 63 Hz
- **Input current:** 6 A @ 115 V_{AC}; 3 A @ 230 V_{AC}
- **Efficiency:** >65% @ full load, nominal line
- **EMI/RFI:** FCC Part 15 Class B; VDE 243 Calss B & CISPR 22 Class B

Output load range:

Output	Voltage	Regulations	Minimum load	Maximum load	Peak load	Ripple & Noise
V1	+3.3 V	+/-5 %	0 A	14 A	-	50 mV
V2	+5 V	+/-5 %	1 A	25 A	-	50 mV
V3	+12 V	+/-5 %	0.2 A	8 A	16 A	120 mV
V4	-12 V	+/-10 %	0 A	0.8 A	-	120 mV
V5	-5 V	+/-5 %	0 A	0.5 A	-	100 mV
V6	+5 VSB	+/-5 %	0 A	1 A	-	50 mV

1. Maximum continuous DC output power shall not exceed 250 W
2. +3.3 V and +5 V total O/P power should not exceed 145 W
3. -12 V and -5 V max. total combined current is 0.8 A
4. M.T.B.F: 100K hours min. at max. load and 25° C ambient conditions

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B.2 -48 V_{DC} power supply

The following specifications describe the physical and electrical characteristics of a 310 W, four output, DC to DC switching power supply housed in a standard size PS/2 casing.

Specifications

Input voltage:	-38 ~ -58 VDC (continuous operation)
	-48 VDC (normal operation)
Input current:	10 A max. @ -48 V_{DC} input
Inrush current:	5 A max. @ -48 V_{DC} input
Efficiency:	70% min. @ full load and normal line voltage

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Output characteristics:

Output voltage	Loading current			Total regulation tolerance		Noise plus ripple
	Min.	Max.	Surge	Max.	Min.	Max.
+5 V_{DC}	2 A	25 A	30 A	+3%	-3%	50 mV p-p
+12 V_{DC}	0 A	10 A	12 A	+3%	-3%	120 mV p-p
-5 V_{DC}	0.0 A	1.0 A	-	+5%	-5%	50 mV p-p
-12 V_{DC}	0.0 A	5 A	-	+3%	-3%	120 mV p-p

Table B.1: -48 V_{DC} power supply output characteristics

Note 1: Total regulation tolerance includes temperature change, warmup drift and dynamic load.

Note 2: Ripple and noise were measured differentially at the power supply using loads that were each shunted by at least a 0.1 m F ceramic disc capacitor and a 10 m F electrolytic capacitor, each capacitor having a bandwidth up to 20 MHz.

Overshoot (resistive load):

Any output overshoot when the power is turned on does not exceed 10% of the nominal output voltage.

Output power: Maximum continuous: 310 W

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Power good and power fail signals (optional):

When the power is turned on, the power good signal will activate 100 to 500 ms after all output DC voltages are operating within their respective regulation limits.

The power fail signal will activate at least 1 ms before the +5 V output voltage falls below its regulation limit.

Short circuit protection:

A short circuit placed on any output to ground is shut down. When the short circuit conditions have ceased to exist, power will then be recycled to restart the power supply.

Over-current protection:

The power supply will shut down all the DC outputs when any output is overloaded beyond its current limit or beyond its nominal line voltage limit. When the over-current conditions have ceased to exist, power will then be recycled to restart the power supply.

Current limit ranges:	5 V:	32 ~ 45 A
	12 V:	13 ~ 20 A
	-12 V:	6 ~ 12 A
	-5 V:	1.5 ~ 3 A

Over-voltage protection:

The power supply will shut down all the DC outputs when any output maximum voltage limit is exceeded. When the over-voltage conditions have ceased to exist, power will then be recycled to restart the power supply.

Voltage limit ranges:	5 V:	6.25 ±0.75 V
	12 V:	14 ±1 V
	-5 V:	-6.25 ±0.75 V
	-12 V:	-14 ±1 V

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Reset time:

When the power supply has automatically shut down, and the short circuit, over-current and/or over-voltage conditions have ceased to exist, power will be automatically recycled to restart the power supply within 3 seconds of such return to normal conditions.

No load start:

When the power supply is switched on but with no load connected, the power supply does not get damaged, and it is still completely safe for users.

Transient response:

Dynamic load change: ±50% of maximum rating load

Recovery time: 500 µs max.

Reliability:

Mean time between failures (MTBF):100,000 hours minimum

Operating temperature:	0 ~ 50° C
Storage temperature:	-40 ~ 60° C
Operating and storage humidity:	10 ~ 95% RH
Operating altitude:	sea level ~ 15,000 ft
Storage altitude:	sea level ~ 50,000 ft

International Standards Compliance

Safety:	UL 1950 CSA 22.2 No. 234 TUV EN 60950
EMI:	FCC Part 15 Subpart J Class B

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DC Output wire list

All DC output cables use UL 1007 type wires.

Connector	Output	Color	Wire #AWG	Length (mm)	Housing	Terminal
P8-1	PG	Orange	18	300 +30/-10	BURNDY GTC 6P-1 or equivalent	BURNDY DCK 18-2TR9 or equivalent
P8-2	+5 V	Red	18			
P8-3	+12 V	Yellow	18			
P8-4	-12 V	Blue	18			
P8-5	COM	Black	18			
P8-6	COM	Black	18			
P9-1	COM	Black	18	300 +30/-10	BURNDY GTC 6P-1 or equivalent	BURNDY DCK 18-2TR9 or equivalent
P9-2	COM	Black	18			
P9-3	-5 V	White	18			
P9-4	+5 V	Red	18			
P9-5	+5 V	Red	18			
P9-6	+5 V	Red	18			
PE-1	+12 V	Yellow	18	300 +30/-10	AMP 480424-0 or equivalent	AMP 61314 or equivalent
PE-2	COM	Black	18			
PE-3	COM	Black	18			
PE-4	+5 V	Red	18			
PF-1	+5 V	Red	20	150 +30/-10	AMP 171822-4 or equivalent	AMP 170262-1 or equivalent
PF-2	COM	Black	20			
PF-3	COM	Black	20			
PF-4	+12 V	Yellow	20			
PA-1	+12 V	Yellow	18	300 +30/-10	AMP 480424-0 or equivalent	AMP 61314 or equivalent
PA-2	COM	Black	18			
PA-3	COM	Black	18			
PA-4	+5 V	Red	18			
PB-1	+12 V	Yellow	18	150 +30/-10	AMP 480424-0 or equivalent	AMP 61314 or equivalent
PB-2	COM	Black	18			
PB-3	COM	Black	18			
PB-4	+5 V	Red	18			

Table B.2: -48 V_{DC} power supply DC output wire list

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B.3 24 V_{DC} power supply

This is a DC to DC switching mode power supply with a 24 V_{DC} input.

Input voltage:+19 ~ +32 V_{DC} (normal operation)

Input current:16 A max. @ +24 V_{DC} input

Inrush current:10 A max. @ +24 V_{DC} input

Output load range:

Table B.3: 24 V_{DC} power supply output load range

Output No	Output	Min. load	Rated load	Peak load	Voltage accuracy
1	+5 V	1.0 A	25 A	30 A	4.90 ~ 5.10 V
2	+12 V	0 A	10 A	12 A	11.28 ~ 12.72 V
3	-12 V	0 A	1 A	2 A	-11.40 ~ -12.60V
4	-5 V	0 A	1 A	2 A	-4.75 ~ -5.25 V

At the factory, the +5 V output was set between 5.00 and 5.10 V, while other outputs were simultaneously set at 60% of their respective rated loads.

The -5 V and -12 V outputs can be used at their respective rated loads. The +5 V output should carry a load of at least 4 A.

Output power:

Total DC continuous power does not exceed 250 W. Each output should be able to operate continuously under its maximum load.

Ripple and noise:

Peak to peak ripple and noise for each output is less than 1% of each output's respective voltage. Measurements were performed with a 15 MHz bandwidth limited oscilloscope, and each output was terminated with a 0.47 µF capacitor. V

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Line regulation:

The output line regulation for each output is less than ±1%, when measured at each output's respective rated load and under ±10% changing input voltage conditions.

Load regulation:

The values for each of the following output numbers were obtained by changing each output load ±40% from the 60% rated load, whilst simultaneously keeping all other outputs at 60% of their respective rated loads.

Table B.4: 24 V_{DC} power supply load regulation

Output No	Output	Min. load	Rated load	Peak load	Voltage accuracy
1	+5 V	1.0 A	25 A	30 A	4.90 ~ 5.10 V
2	+12 V	0 A	10 A	12 A	11.28 ~ 12.72 V
3	-12 V	0 A	1 A	2 A	-11.40 ~ -12.60V
4	-5 V	0 A	1 A	2 A	-4.75 ~ -5.25 V

Power good signal:

When the power is turned on, the power good signal will activate 100 to 500 ms after all output DC voltages are operating within their respective regulation limits.

Power fail signal:

This will activate at least 0.5 ms before any of the output voltages fall below their respective regulation limits.

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General features

Efficiency:

65% typical when measured at nominal input and rated load.

Input protection:

Protection against wrong polarity if the +24 V input voltage is mistakenly reversed.

Output protection:

If for some reason the power supply fails to control itself, the built-in over-voltage protection circuit will shut down the outputs to prevent damage to external circuits. The trip point of the

crowbar circuit is approximately 5.7 ~ 7.0 V. The power supply will go into hiccup mode under short circuit or overload

conditions, and will recover automatically when such conditions cease to exist.

Environmental specifications

Operating temperature: 0 ~ 45° C

Storage temperature: -40 ~ 75° C

International standards compliance

Safety: UL 1950 D3

CSA 234

TUV EN 60950

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Appendix C

Touchscreen (optional)

- Installation of touchscreen driver

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Appendix C Optional Touchscreen

C.1 Specifications

Electrical

Operating Voltage:	3.3 to 5 VDC typical
Sheet Resistance:	220 ± 30% W/square
Linearity:	+/- 1.5% full scale linearity error in either direction.
Insulation Resistance:	> 20 MΩ @ 25 VDC.

Optical

Total light Transmission:	68% typical (> 66% @ 550 nm test)

Environmental

Operating Temperature Range:	-20°C to +50°C, ambient humidity
Storage Temperature High:	+70°C, 500 hours at ambient humidity
Storage Temperature Low:	-40°C, continuous at ambient humidity
Accelerated Aging:	100 hours continuous exposure at 60°C/95% RH
	Thermal Shock: 25 cycles (one cycle is 30 min. dwell alternating from -40°C to +85°C with less than 10 min. trans fer time).

Mechanical

Activation Method:	Gloved or ungloved finger
	Delrin or plastic stylus (no metal) with 1mm radius full hemispherical tip
Activation Force:	< 70g average with non-metal stylus
	< 90g average with 5/8" diameter sili cone finger

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Durability

Point Activation Life:	1 Million activations on a single point with a 5/8" diameter silicone finger with a 350g load at 2 Hz
Character Activation Life:	>100,000 characters written within a 20mm x 20mm

C.2 Installation of Touchscreen Driver

The touchscreen for the AWS-8248 Series provides drivers for use with MS-DOS, Windows 3.1, 95, 98, NT, and 2000. For the detailed touch-screen driver installation procedure, please refer to the "TSCB-9516 Driver Installation Guide" in the accessory box.

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